ABSTRACT OF THE INVENTION

A swinging objective retarding immersion lens system and method therefore which provide a low voltage electron beam with high beam current, relatively high spatial resolution, a relative large scan field, and high signal collection efficiency. The objective lens includes a magnetic lens for generating a magnetic field in the vicinity of the specimen to focus the particles of the particle beam on the specimen, an electrode having a potential for providing a retarding field to the particle beam near the specimen to reduce the energy of the particle beam when the beam collides with the specimen; a deflection system including a plurality of deflection units situated along the beam axis for deflecting the particle beam to allow scanning on the specimen with large area, at least one of the deflection units located in the retarding field of the beam, the remainder of the deflection units located within the central bore of the magnetic lens; and a annular detection unit with a relatively small aperture, located underneath the primary beam define aperture, to capture secondary electron (SE) and backscattered electrons (BSE).